

WE CLAIM:

- 5 SUB A<sup>2</sup> 1. A two-pass method for achieving maximal data compression for a voice frame modem relay channel within a voice frame network between two endpoint modems, wherein each modem is operatively coupled with an associated gateway thereby defining an endpoint segment including an endpoint modem and its associated gateway, the method comprising:
- first negotiating maximal data compression parameters for either of the two endpoint segments;
- 10 communicating such maximal data compression parameters for at least one of the two endpoint segments to the other of the two endpoint segments; and
- second negotiating maximal end-to-end data compression parameters for the modem relay channel based upon the first negotiated maximal data compression parameters for the two endpoint segments.
- 15 2. The method of claim 1 which further comprises:
- transitioning the channel from a voice mode into a modem relay mode of operation.
- 20 3. The method of claim 2, wherein said transitioning includes terminating the end-to-end layer between the two modems and third negotiating at either segment a local physical layer between the two modems and their associated gateways.
- 25 4. The method of claim 3, wherein said third negotiating at one of the endpoint segments of a corresponding physical layer is delayed until said communicating is completed.
- 30 5. The method of claim 4, wherein said third negotiating is delayed by a refusal of the endpoint segment receiving the communicated maximal compression parameters to respond to commands from the endpoint segment performing said communicating.
6. The method of claim 1 which further comprises storing the end-to-end data compression parameters for the modem relay channel in a memory as an end-to-end negotiation posture.

7. A method of maximizing data compression between two modems in a voice frame network wherein each of the two modems is operatively coupled with an associated gateway defining a segment, the method comprising:

first negotiating at a first segment the maximum data compression to determine  
5 the maximum data compression capability of the first segment and communicating the determined capability from the first segment to a second segment;

second negotiating at the second segment the maximum data compression to determine the maximum data compression capability of the second segment;

10 determining the maximum end-to-end data compression capability of a channel between the two modems;

renegotiating at the first segment the determined maximum end-to-end data compression capability of the channel with respect to the first segment.

8. The method of claim 7 which further comprises:

15 terminating the end-to-end layer between the two modems; and

negotiating at either segment a local physical layer between the two modems and their associated gateways, thereby transitioning the channel into a modem relay mode of operation.

20 9. The method of claim 7 which, after said renegotiating, further comprises:

storing in a memory an end-to-end negotiation posture of the two modems representative of the maximum end-to-end data compression capability of the channel.

10. Apparatus for maximizing data compression between two endpoint modems in a voice frame network defining a channel therebetween, wherein each of the two modems is operatively coupled with an associated gateway, with each modem and its associated gateway defining a segment, the apparatus comprising:

5 a dual first-pass negotiation mechanism for independently determining the maximal data compression capability of each segment;

an end-to-end data compression capability determination mechanism for determining the maximal end-to-end data compression capability based at least in part upon the independently determined maximal data compression capability of each  
10 segment; and

a second-pass negotiation mechanism for establishing the determined maximal end-to-end data compression capability for the channel.

11. The apparatus of claim 10 which further comprises:

15 an end-to-end negotiation posture storage mechanism for storing in a memory the determined maximal end-to-end data compression capability for the channel.

12. The apparatus of claim 10 which further comprises:

20 a modem relay connector for transitioning the channel to a modem relay mode of operation.

13. The apparatus of claim 12, wherein said modem relay connector includes a local proxy negotiation mechanism for terminating the end-to-end layer between the two modems and for negotiating at either segment a local physical layer between the two  
25 modems and their associated gateways.

14. A computer-readable medium containing a program for maximizing data compression between two endpoint modems in a voice frame network defining a channel therebetween, wherein each of the two modems is operatively coupled with an associated gateway, with each modem and its associated gateway defining a segment, the program comprising:

instructions for first negotiating maximal data compression parameters for either of the two endpoint segments;

instructions for communicating such maximal data compressions parameters for at least one of the two endpoint segments to the other of the two endpoint segments; and

instructions for second negotiating maximal end-to-end data compression parameters for the modem relay channel based upon the first negotiated maximal data compression parameters for the two endpoint segments.

15. The computer-readable medium in accordance with claim 14, which computer-readable medium further comprises:

instructions for transitioning the channel from a voice mode into a modem relay mode of operation.

16. The computer-readable medium in accordance with claim 15, wherein said instructions for transitioning include instructions for terminating the end-to-end layer between the two modems and instructions for third negotiating at either segment a local physical layer between the two modems and their associated gateways.

17. The computer-readable medium in accordance with claim 16, which computer-readable medium further comprises:

instructions for storing the end-to-end data compression parameters for the modem relay channel in a memory as an end-to-end negotiation posture.

18. Apparatus for maximizing data compression between two endpoint modems in a voice frame network defining a channel therebetween, wherein each of the two modems is operatively coupled with an associated gateway, with each modem and its associated gateway defining a segment, the apparatus comprising:

5 means for first negotiating at a first segment the maximum data compression to determine the maximum data compression capability of the first segment and communicating the determined capability from the first segment to a second segment;

means for second negotiating at the second segment the maximum data compression to determine the maximum data compression capability of the second  
10 segment;

means for determining the maximum end-to-end data compression capability of a channel between the two modems; and

means for renegotiating at the first segment the determined maximum end-to-end data compression capability of the channel with respect to the first segment.  
15

19. The apparatus of claim 18 which further comprises:

means for terminating the end-to-end layer between the two modems; and

means for negotiating at either segment a local physical layer between the two modems and their associated gateways, thereby transitioning the channel into a modem relay mode of operation.  
20

20. The apparatus of claim 19 which further comprises:

means for storing in a memory an end-to-end negotiation posture of the two modems representative of the maximum end-to-end data compression capability of the  
25 channel.